Fundamental Mechanics: Quiz 3

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Name: _Taylor Larrechea_ Total: 5 /5

Formulae: $\sin\theta = \dfrac{\text{opp}}{\text{hyp}}$ $\cos\theta = \dfrac{\text{adj}}{\text{hyp}}$ $A = \sqrt{A_x^2 + A_y^2}$

Consider the vectors $\vec{A} = -4\hat{i} + 4\hat{j}$ and $\vec{B} = 2\hat{i} - 3\hat{j}$. Let $\vec{C} = \vec{A} + \vec{B}$. Determine the **components of $\vec{C}$**, **draw the vector** as accurately as possible on the coordinate axes that are provided and determine the **magnitude of $\vec{C}$**.
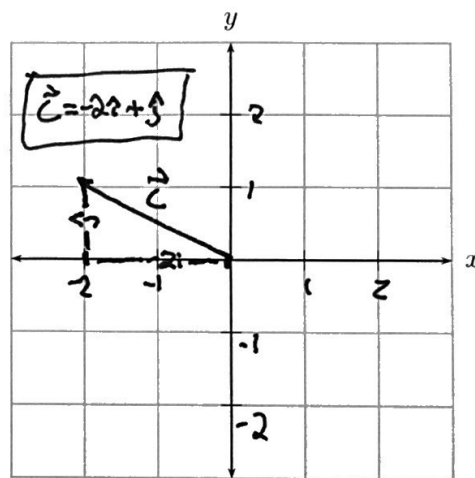
$\vec{A} = -4\hat{i} + 4\hat{j}$ $\vec{C} = \vec{A} + \vec{B}$

$\vec{B} = 2\hat{i} - 3\hat{j}$

$\vec{A} + \vec{B} = \vec{C}$

$(-4i + 2i) + (4\hat{j} - 3\hat{j}) = \vec{C}$

$-2i + \hat{j} = \vec{C}$

$\boxed{\vec{C} = -2i + \hat{j} \quad \text{magnitude} = \sqrt{5}}$
X component $= -2$ $C = \sqrt{5}$
Y component $= 1$

$C = \sqrt{-2^2 + 1^2}$
$C = \sqrt{4+1}$
$C = \sqrt{5}$